Material Safety Data Sheet

Section 1. Chemical Product and Company Identification

Product Name GTF, FORMALIN SUBSTITUTE	Product Code FSXXXX
Manufacturer's Name StatLab Medical Products, Inc.	Emergency Telephone Numbe 800-424-9300
Address (Number, Street, City, State, and ZIP Code) 106 Hillside Dr.	Telephone Number for Informatio 800-442-3573 x 2
Lewisville, TX 75057	Date Preparec 6/5/2003 rev(5/08)
	Signature of Preparer (optional

Section 2. Composition/Information on Ingredients

Component	CAS #	OSHA PEL	ACGIH TLV	Other Limits Recommended	Percent
Glyoxal	107-22-2	0.1 mg/m^3			
Ethanol	64-17-5	1000 ppm			
Buffer (non-toxic)	Proprietray		Not established; generaly considered not hazardous		
Water	-	-			

Section 3. Hazards Identification

Emergency Overview

Clear liquid; colorless to very slightly pale yellow; mild, acidic/alcoholic odor. Irritant to skin and eyes. Prolonged or extensive unprotected skin contact may cause allergic skin responses in sensitive individuals. Not likely to pose an inhalation threat under normal conditions of use. Ingestion is likely to cause adverse effects on the gastrointestinal tract. In case of a large spill (several gallons or more), or fire, respiratory protection should be worn. Beware of chronic exposure to aerosols.

Combustible liquid.

Potential Health Effects

Primary Route(s) of Exposure: Eyes and skin. Note: GTF is an effective tissue fixative preservative); it will kill and preserve living human cells if liquid is allowed to remain in contact with eyes, skin or gastrointestinal system.

Eye: Contact of liquid with eyes may cause irritation.

Skin: Extended contact of liquid with skin will cause irritation and may initiate an allergic dermatitis. Brief contact is not likely to produce adverse effects.

Ingestion: Ingestion of liquid is likely to produce adverse effects on the gastrointestinal system.

Inhalation: Inhalation of vapors during normal conditions of use are not likely to present a health hazard because the solution exhibits almost no vapor pressure due to gyloxal. Breathing vapors from hot solutions is likely to cause irritation of the respiratory tract. No respiratory irritation has been reported due

Chronic/Carcinogenicity	No chronic effects reported. Gyloxal in not considered to be a carcinogen or potential carcinogen by the National Toxicology Program, the International Agency for Research on Cancer, or OSHA (USA).
Signs/Symptoms	Affected skin will appear dry, tough and perhaps cracked. Affected corneas may appear cloudy; eyes may water and become reddened. Effects on the gastrointestinal tract are unknown, but presumably may include nausea and/or vomiting. Effects on the respiratory are unknown, but presumably may include coughing and difficulty in breathing. There are no pre-existing medical conditions known to be aggravated by exposure to this solution.
Teratology	No data available.
Reproduction	No data available.
Mutagenicity	Mutagen tests involving microorganisms and mammalian tissue cultures have dubious relevance to workplace exposures. Glyoxal was found to be mutagenic with and without metabolic activation in the Ames bacterial point mutation assay, was genotoxic in the CHO/SCE and primary hepatocyte DNA repair tests. Two whole-animal genotoxic studies have been conducted: the mouse micronucleus test showed no activity at 400 mg/kg; the Drosophila sex-linked recessive lethal assay was also negative.

Section 4. First Aid Measures

Eye	Flush eyes for 30 minutes in an eyewash station before seeking professional assistance. If symptoms persists after washing, consult a physician.
Skin	Remove contaminated clothing, including footwear; wash before reuse. For minor exposure, wash affected area with water and mild soap, rinsing thoroughly. In cases of prolonged, repeated or extensive exposure, rinse affected area or entire body for 20-30 minutes. For mild irritation, apply a good quality skin lotion. For more severe conditions, consult a physician.
Ingestion	Call a poison control center immediately. If victim is conscious, have him/her drink several glasses of water to dilute the solution. Induce vomiting only upon the advice of a physician or poison control authority.
Inhalation	First aid for inhalation exposure is not likely to be needed under foreseeable conditions of use and misuse, except in cases where the solution has been heated. Remove victim to fresh air if coughing or difficulty in breathing is experienced. Consult a physician if symptoms persist or worsen.
All Other Means of Exposure	CONTACT POISON CONTROL CENTER IMMEDIATELY. Be prepared to provide hazardous ingredient information from Section 2.
Note to Physician	GTF is a histological fixative, If ingested, it will fix lining cells of the gastrointestinal tract. The solution loses its efficacy as a fixative if the pH is raised to neutrality. In cases of accidental ingestion, neutralization could reduce the risk of damage to the lining; furthermore, neutralization might reduce the risk of damage to the respiratory tract if aspiration occurs

during vomiting.

Section 5. Fire Fighting Measures

Flammable Properties	Flash Point	102°F	Method	CC
Flammable Limits	Lower	N/A	Upper	N/A
Autoignition Temperature		N/A		

Hazardous Combustion Products: Carbon monoxide and carbon dioxide

Extinguishing Media: Use water spray, dry chemical, carbon dioxide or alcohol foam.

Fire Fighting Instructions: Firefighters should wear self-contained breathing apparatus and full protective clothing. Use water to cool nearby containers and structures exposed to fire.
Vapors can travel to source of ignition and flash back to liquid if vapor temperature exceeds flash point. This is likely only under conditions of intense heat.

Section 6. Accidental Release Measures

Small Spill: Wear protective gloves and splash-proof goggles. Use damp sponge or mop to remove spilled liquid, or contain and solidify liquid with absorbent booms, pillows or loose material. Wash contaminated area with water. Spills left to dry will become sticky. Discard absorbents and other contaminated solids in a receptacle suitable for hazardous chemical waste (they contain a combustible chemical) Liquid waste may be discarded down the drain with approval by wastewater authorities or may be removed by a licensed waste hauler.

Large Spill: A large spill is defined in part by the local situation, especially regarding ventilation. At room temperature in a well ventilated room, 1-5 gallons might be handled safely without a respirator and could be considered a small spill (see above). At elevated temperature or in a poorly ventilated area, respiratory protection would be advisable; this would constitute a large spill. Evacuate the area and have an emergency response team perform the cleanup. Protective gloves, rubber boots, impermeable aprons and full-face respirators should be used by all personnel. Eliminate all sources of ignition. Recover free liquid if possible and discard down the drain if given approval by wastewater authorities. Alternatively, contain and solidify spilled liquid absorbent booms, pillows or loose material. Have a licensed waste hauler remove contaminated solids (they contain combustible chemical). Comply with all applicable governmental regulations on spill reporting and on the handling and disposal of hazardous waste.

Section 7. Handling and Storage

Handling: Wear protective gloves and splash-proof goggles when handling this solution. An impermeable apron is also recommended as a prudent measure of protection. Avoid all contact with skin and eyes. Do not continue to wear contaminated clothing after a spill. If the solution is heated, use a fume hood.

Storage: Store in a well ventilated area, at room temperature, away from heat, sparks and flames.

Section 8. Exposure Controls, Personal Protection

Engineering Controls: General room ventilation is adequate when handling normally anticipated quantities in a laboratory setting. For larger scale exposure, local exhaust (a fume hood) is preferable.

Respiratory Protection: Not needed except under emergency conditions involving a large spill or a significant aerosolization of the product, when a full facepiece respirator equipped for organic vapors is recommended. Alternatively, use a self-contained breathing apparatus or supplied-air respirator.

Skin Protection: Wear nitrile gloves. Do not use latex surgical gloves for protection against any hazardous liquid. An eyewash station and safety shower should be nearby, preferably in the same room, no more that 100 feet or 10 seconds away.

Eye Protection: Wear splash-proof goggles. Do not use safety glasses. If a face shield is worn as protection against biohazards, splash-proof goggles should still be used. Do not wear contact lenses when handling any hazardous chemical.

Permissible Exposure Levels (see also Section 2)

Component	CAS #	OSHA PEL	ACGIH TLV	Other Limits Recommended	Percent
Glyoxal	107-22-2	0.1 mg/m^3			
Ethanol	64-17-5	1000 ppm			
Buffer (non-toxic)	proprietary	1000 ppm			
Water	-	-			

Section 9. Physical and Chemical Properties

Boiling Point	185-220°F	Specific Gravity (H2O = 1)	1.003 @ 20°C
Vapor Pressure (mm Hg)	not determined	Melting Point	
Vapor Density (AIR = 1)	not determined	Evaporation rate (Butyl Acetate = 1)	32°F
Solubility in Water	complete	Physical State	Liquid
Appearance and Odor	mild, acidic/alcohol odor; clear; colorless to slightly pale yellow	Other	pH: 3.75-4.25 (ready to use products)

Section 10. Stability and Reactivity

Chemical Stability: Stable

Incompatibility: Strong oxidants will convert glyoxal to formic acid.

Hazardous Decomposition Products	None
Hazardous Polymerization	None

Section 11. Toxicological Information

[Report of occupation exposures and details of animal or microbial testing of relevance to humans]

Acute effects: 20 mg of concentrated glyoxal administered into rabbits eyes in the standard Draize test produced severe irritation.

Acute and Chronic effects: Contact dermatitis and eczema have been reported in hospital workers who used strong antiseptics containing glyoxal. Symptoms abated when use of these products was discontinued. Workers handling a glyoxal-based resin reported eczema on their hands; fiberglass in the resin could not be ruled out as a contributing factor.

Acute oral effects: OSHA considers chemical to be toxic if their LD_{50} is at or below 500 mg/kg. LD_{50} is the dose killing 50% of the test animals. Glyoxal is not considered to be toxic by OSHA. Using concentrated glyoxal, the LD_{50} was 760 mg/kg in guinea pigs, and ranged from 1.1-4.3 g/kg in rats. In another study the LD_{50} in rats was 3.08 ml/kg.

Acute and Chronic inhalation effects: Inhalation of air saturated with glyoxal vapor for 8 hours was not lethal to rats. Inhalation of aerosols containing glyoxal is harmful but not likely to be encountered in laboratory use. ACGIH has established a TLV-TWA of 0.1 mg/m_3 based upon unpublished findings of squamous cell metaplasia in the larynx of rats exposed of 2 mg/m^3 to 10 mg/m^3 for 6 hours/day, 5 days/week for 29 days.

Subchronic effects: A 90 day feeding study with rats and dogs found no effects on on food consumption, mortality and gross or microscopic pathology. The no-observed-effect level for glyoxal in the diet of the animals was 0.12 g/kg/day.

Other chronic effects/Carcinogenicity: There is no evidence of cancer or target organ effects deriving from workplace exposures or from reasonably relevant toxicological studies except for contact skin rashes.

Section 12. Ecological Information

Ecotoxicity: GTF exhibit a low order of environmental toxicity and low potential to bioaccumulate. There is no inhibition of bacteria in wastewater effluent when glyoxal is properly introduced into an acclimated biological treatment facility.

Environmental fate: All ingredients in GTF consist solely of carbon, hydrogen and oxygen. GTF is readily biodegradable to carbon dioxide and water.

Section 13. Disposal Considerations

Glyoxal itself is not an EPA-listed hazardous waste. In the concentration present in these products, it does not possess any characteristics that qualify it as a hazardous waste by the EPA. It is the ethanol and the pH that qualifies GTF as hazardous waste.
Drain disposal is the recommended method of disposal, based on ecotoxicity and and biodegradation information given in Section 12, provided approval is granted by local wastewater treatment authorities.
As an alternative to drain disposal, use a licensed hazardous waste hauler.
Regardless of the method chosen for disposal, be sure to follow federal, state and local regulations. Proper waste disposal is the generator's responsibility.

Section 14. Transport Information

GROUND SHIPMENTS: Not regulated

AIR SHIPMENTS: Ethanol Solution 3, UN1170, III

NOTE: It is ultimately the shippers responsibility to make hazard class determination based on their best information available.

Ground transportation within the United States: GTF is not considered hazardous material when shipped within the United States by ground transportation.

Section 15. Regulatory Information

OSHA (USA): Under the Hazard communication Standard, GTF is a hazardous material; they are combustible liquids, irritants and may cause contact dermatitis. That standard and the Laboratory Standard (Occupational Exposure to Hazardous Chemicals in Laboratories) mandate that exposed workers receive proper training in the properties of this product, work practices involved with its handling and disposal, and interpretation of its MSDS. Customers who in turn send this product on to their clients or satellite facilities must supply an MSDS at least with the initial shipment.

Section 16. Other Information

NFPA Ratings: Health: 2 Flammability: 1 Reactivity: 0 Special Notice Key: None